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Belknap Freeman, PE
Colonel , USAF (Retired)
119 Hickory Lane
Rosemont, PA 19010-1017

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Docket FRA 2000-7267 Notice 28

Railway Safety Advisory Committee

In particular - RSAC Task 96-6 Relative to Rule Making

The purpose of this docket submission is to appraise the FRA of specific objections, to those directly involved, of certain endeavors and prospective of the FRA in respect to their continued quest to implement a "vision".

This response consists of and includes a letter dated 6 June '02 to Mr. David Gunn, and its two attachments; its focus, to suggest the NAJPTCP be brought to a close and return to basic simple proven technology.

The thoughts expressed in that which is attached are strong and harsh, with the intention to gain ones attention rather than just a "brush off"

As it is anticipated the FRA will choose or attempt to refute and challenge that which is presented, a response will be appreciated.

Belknap Freeman

Belknap Freeman,PE
Wash DC Reg. PE6210
Rosemont, PA
6 June 2002

Belknap Freeman, PE

119 Hickory Lane Rosemont, PA 19010-1017 (610) 527-0146

6 June 2002

Mr. David Gunn, President
National Railroad Passenger Corp
%0 Massachusetts Ave, NE
Washington,DC, 20002

Re: NAJPTCP - An issue for "house Cleaning" or elimination

Dear Mr. Dunn:

After some four years and Amtrak's direct involvement; and a still "on going" effort the "North American Joint Positive Train Control Program" (NAJPTCP), still lacks a viable proven solution to a "political mandated vision" (to reinvent the wheel). The NAJPTCP activity in Illinois contains inherent flaws , and is unfolding to be prohibitively expensive, with built in obsolesce, and a far cry from **existing simple** multi-aspect continuous cab signals, with speed control techniques currently available, and in service (associated with less need for highly trained individuals, also need to only existing maintenance facilities.

Amtrak's capability to provide competitive service in the St. Louis - Chicago corridor (with parallel airlines and highways I-55 and I-57) would have achieved an improved schedue years ago, if it had not been for the Federal Railroad Administration's (FRA) squandering time and money, now in excess of 60 million; in the FRA's attempt to invent a new version for "Train Control", to satisfy their rule, that no train may operate in excess of 79 mph without some additional form of train control. Even at best, the FRA's "vision" can not be implemented without deviations or waivers from many of their own rules. (Such "rules" tried and true, existed for many decades prior to the very existence of the FRA).

It is my professional opinion that the concept of the NAJPTCP scheme, for the operation of trains is unacceptable, in respect to the safety of train operation. Therefore:

It is suggested that Amtrak call a halt to this farce, and implement a "standard" off the shelf existing cab signal technology for the Illinois Corridor. It might be noted that such a concept will match Amtrak's locomotive fleet, which is already so equipped (And the Union Pacific could **improve** the level of their existing cab signal packages).

Where is this coming from?? Amtrak's retired "Senior Engineer Communications, Signals and Electric Traction" with excess of sixty years involvement with Railroad and Transit background (In both the States as well as over seas).

To refresh your memory, one of the last times we met, for example, a few years back; as a Delaware County representative on SEPTA's Citizen Advisory Committee. at the time your being SEPTA's General Manager, at your dedication of the rebuilt station of the Bristol Station of the REgional Rail Route # 7

Prior to your recent, and appreciated arrival, Amtrak has been spending time and effort attempting to "set and modify" a limited pool of locomotives to be captive with and restricted to the NAJPTCP. Also, with membership in the Association of American Railroads(AAR), Amtreak is in the position to contribute to its portion of the twenty million the AAR established as a Grant to this project.

As recently as Tuesday evening, 21 May, at dinner sponsored by the Railway Signal Suppliers, Inc, (RSSI), at Louisville, KY. Mr. George A Givalla, Associate Administrator of FRA's Bureau of Safety, made a detailed strong issue, to the effect, that the FRA would not approve any possible Positive Train Control scheme that did not include the use of conventional signal track circuits (to provide for broken rail detection, in the absence of any known technique that would provide for the same degree of detection). Such pronouncement makes a "farce" of the cost issues touted by the cheer leaders who claim that their "vision" will be cheaper than existing standard signal techniques (In the face of the requirement to keep existing signal technology in **addition** to the exploded "parts population", added "systems" and "software").. This same issue of requiring track circuits was further highlighted at FRA's "RSAC" meeting at Washington,DC on the 29th of MAy

As the FRA state one would be required to keep one's track circuits; it is absurd for the FRA or anyone else, to propose other than the existing technology, to employ the very track a train is operating on, to pass intelligence to the train on the vary same rails, continuously, no address or other look up table being required, et all.There are thousands of equipped vehicles and thousands of miles of track so equipped as a challenge to the cost, reliability, safety, ability to move an unequipped vehicle, simple to maintain and understand, interoperaboloty; for any attempt to prove that the NAJPTCP would be better.

Attached are two relatively brief papers, which address some of the FRA issues and short comings of the NAJPTCP; which you might, with your busy schedule, elect to pass on to your technical staff for evaluation and recommendations back to you.

The Federal Railroad Administration in respect to "NAJPTCP"

Introduction - Background
- History
- Origin of "vision"
- Satisfaction
- Current Basis

FRA's Rationale for support of "NAJPTCP"
- Pertinent Issues
- Fact and Fancy

Flaws and Waivers
- Continuous
- Complexity and Obsolescence

Up Date
- FRA just does not know
- FRA in a world of dreams
  - Track Circuits
  - Risk analysis

Conclusion

Information - Background

That which follows are thoughts and evaluation related to the Federal Railroad Administration (FRA) in respect to the North American Joint Positive Train Control Program (NAJPTCP) as currently, after some four years of effort, is yet being attempted to be implemented in Illinois over a portion of the St. Louis - Chicago rail corridor. These comments are only "highlighted items" and are not intended to be all inclusive.. The comments attempt to address the issues rather than relate to any specific individuals.

History

The FRA came into being approximately in the mid-sixties , and at that time most signal safety standards were previously well established. Many of to contemporary programs with which the FRA have an interest in were well along the way prior to the FRA's inception (e.g. "Speed Control applied to continuous multi-aspect cab signals", the Department of Commerce involvement with PRR's original "Metroliners" program, installation of hundreds of miles of Centralized Traffic Control, with many of the installations providing indication at control panels of "track occupancy" at every signal block, to name but a few).

A significant shortcoming in the FRA's background, is a one sided approach to railroad safety; their very reporting requirements, essentially having the basis of an accident or failure; thus no record of the "good" existing systems have functioned to avert accidents or injury.(e.g.

Even responsible employees taking facilities for granted -- the case for an example; say at Downingtown, PA, a derailment in an interlocking and a second train on a parallel track. sitting at the "Home Signal" --- to have to tell the "Road Foreman of Engines that he ought to go and interview the standing crew as to how they happened to be stopped -- in approach to interlocking, an abrupt drop of the cab signal aspect and he wound it down as safely as he could, and managed to get stopped short of the interlockings home signal, now at stop -- but such an episode would not find its way into the FRA's books). The FRA make an issue of broken rail protection; but that relates only to where a broken rail was submitted as a cause of accident and/or derailment. Many individuals, besides myself,can come up with numerous "horror stories" where broken rails were involved; but detected prior to their causing a derailment or mishap.

Origin of "vision"

Years ago, such accidents as "Kelso" and others, caused the National Transportation Safety Board (NTSB), to suggest to the FRA, that they should investigate the possibility of developing a "modern system" which could be applied to eliminate such accidents. The blind NTSB failed to recognize the existence of the types of "off the shelf" techniques in use else where, and not involved or taken advantage of, with the specifics of the accidents reference was made to.

The FRA threw money at part of a joint effort UP and BN endeavor in the Oregon - Washington gate way; but in respect to the multiplicity of waivers the FRA originally granted to felicitate the project, there was no requirement to establish extensive records; thus when the effort died, there was no published data, other than the railroad stating their efforts did not achieve any basis for cost effectiveness.

In later years, the FRA, in pursuit of their vision originated what is known as the "NAJPTCP" endeavors. The FRA originally sponsored twenty million, the Association of American Railroads (AAR) putting up twenty million, and the State of Illinois Department of Transportation set aside another twenty million (Since the projects inception, there have been adjustments and additions to each of the original commitments). Politics became involved (It being the writer's impression that the Department of Transportation (DOT) supported the concept, due to the then downturn in Federal spending on the military supply chain, that some 40 % of Federal expenditures by DOT agencies be directed towards the military supply structure (Rationalized that one might enjoy the potential advantages of acquiring their ideas and technologies).

The FRA, in their final recognition that there has been a "run away" in application of changes of technology, such that many existing rules no longer apply and/or have become vague; and in addition, to set the stage for an alternate inclusion of features related to the NAJPTCP, instituted a proposed notice of rule making (NPRM) docket under the caption "Standard for Development and Use of Processor Based Signal and Train Control Systems".

As written, the FRA's NPRM is quite onerous, to include by definition, **that all liability rests with the railroad,** major new tasks of documentation, employee training, and issues involving railroad tasks concerning information not known to them, ignoring the issue of obsolescence, as well as FRA's calling for outside consultants , to make decisions beyond FRA's comprehension at railroads expense - this means that FRA expects the railroads obligation to pay to educate FRA's staff). (This brings to mind, as to what the National Society of Professional Engineers (NSPE) position was as to Government employees who only masqueraded in their jobs, early on , it was pointed out there was the issue of "Federal Supremacy" which made such persons and their organizations untouchable).

Satisfaction

Concurrently with the FRA's attempts to implement a "vision", Amtrak's staff installed a system, expanding existing four aspect multi-aspect continuous cab signals to nine aspect (for locomotives capable of 150 mph operation) (This provided for locomotives, operating at 150 mph to safely travel with out conflict with conventional wayside signals, by means of requiring two or more wayside signals at "clear" in succession, to provide appropriate braking distance. At the same time, the system is compatible with the slower moving train, with only four aspect cab signals, operating in conjunction with existing wayside signal layout, also matching the slower train to its required braking distance) (While some of the FRA staff were still in diapers, two individuals of the formerPRR, Sold patent rights for "clear - clear" high speed addition cab signal aspects, along with the required technology to achive it, to the then U. S. & S. Co.) The additional **overlay**"Advanced Civil Speed Enforcement System (ACSES) was a new addition.

The FRA in their authorizing the New England installation, over Jolene Molitoris's signature (The Administrator of the FRA at the time) stated that interface with the NTSB indicated that the **indicated the Amtrak New England installation satisfied the gist of their original recommendation** to develop a modern train control concept.

The New England installation is unique in that it involves the best of two worlds, to include the opportunity for progressive installations over added territory in small

stages with no interference to existing motive power and/or conflict with existing wayside signals; yet individually matching the high speed train and the slower freight and/or commuter train to the best of their own individual braking distance needs,

Current Basis

The FRA, in the semi-annual status report to the Congress "DOT - FRA Final Rule Stage" item 2128, 67FR33532-3, 13 May 2002, state in part, as to their NPRM previously mentioned,, and applicable to the NAJPTCP :

> **Anticipated Cost and Benefits:** The proposed rule would provide flexible performance standards for the design of processor-based signal and train control systems, but would not mandate their usage. FRA believes that a railroad would adopt such a system under one or more of the following conditions: (1) the new system is safer; (2) the new system is less expensive; and (3) continued maintenance of the existing system is no longer feasible. The rule would ensure that any replacement system is at least as safe as the current system. Concerning existing processor-based systems, the rule would require railroads to adopt a software management plan, which will ensure proper software configuration, resulting in decreased risk of train accidents due to signal malfunction. FRA has not quantified these benefits because of the difficulties in estimating how many systems are likely to be affected by this rule, what the incremental cost would be, and when the benefits would accrue.

Underline added

At present, the FRA is still full speed ahead, in pursuit of their quest for a solution by the NAJPTCP; as exemplified by and related to the recent meeting of their "RSAC" committee of 29 May '02, in Washington,DC; and in particular, the working group , RSAC Task 97-6, for resolution of comments on their proposed rules for Processor Based Signal and Grain Control Systems (Also comments in public by both the Administrator, as well as the Associate Administrator for Safety).

FRA's Rationale for support of the NAJPTCP

Pertinent Issues

Early on, the FRA was moved by the NTSB recommendation that they find a "Modern Way" for Positive Train Control (As mentioned in this text previously)

The developments took on a life of their own, as economists extolled the concept that with elimination of conventional signal facilities, the concepts envisioned would be simpler and therefore less expensive. -- over all, economies and cost savings became driving "buzz words" (Neglecting the fact that components of a working system did not exist; thus early estimates were pure conjecture).

The FRA insistently and still employ the verbiage in print; that application of a "processor based train control must be as safe or safer than the system it replaces. The FRA hide behind "weasel words"; for to take their definition , to apply a processor based train control system to replace a "dark road", or say a property at best equipped with "Indian tepees and smoke signals", the FRA would be correct.

The FRA consistently state that installations shall be in accord with their rules; however they fail to appreciate there are many standards and installations employed by many properties that are far more stringent and/or not even mentioned in the scope of the FRA rules.

Fact and Fancy

As recently as May 21st, 2002, the Associate Administrator for Safety(FRA), in speaking before the RSSI Dinner at Louisville,KY, specifically stated the FRA would not approve a processor based positive train control system with out an underlying arrangement of conventional track circuits (For the benefit of broken rail protection, such issue the FRA is very much concerned with). Later on 29th May at the FRA's RSAC meeting, in speaking again, he repeated the FRA's concern with broken rails.

Now in stipulating continued use of track circuits, the FRA totally destroy any "pitch" concerning "equivalent costs". In spite of the leaders and new kids on the block, few realize back in and prior to 1935, we were employing track circuits; but also at 100 Hertz, coded, which gave us, almost for free,both the track circuit and its protection as well, operation for continuous cab signals, as well as elimination of wayside line wires to convey signal intelligence from block to block.

The use of coded track circuits, along with their enhanced sensitivity, allow for many other features not envisioned by FRA's rules structure; such as code change points, use of cab signals with out waysides, approach locking, lock out for opposing signals, release of track switch electric locks facilities, et all. Why all this?? Are the cheer leaders taking all these issues into consideration, over and above the issue of obsolesce related to that which the propose, employee training (with the new issue of employee retention), , et all???

Now for Amtrak, can they successfully accommodate the public; when a scheme as envisioned, will have all one's eggs in one basket, and a relative dubious solution to getting a train safely over the road in the event of an individual locomotive, wayside or non equipped vehicle over the road. One only need to explore a most recent (of several) "crash" of Amtrak's Main Frame (Washington,DC to Trenton, on a Friday night at approximately 5:40 PM -- right in the middle of the evening rush hour. KYW, a Philadelphia radio station, was busy warning the traveling commuters of SEPTA's plight (_ one agency impacted). The computer was down for about an hour, and KYW was still busy alerting the public for another hour, as SRPTA was busy rearranging their crews and equipment to restore some semblance of service. The significant issue is that as all SEPTA's Regional trains flow back and forth between the former Reading Railroad territory and Amtrak routes, the disruption impacted their other lines , not part of the territory under computer control, as the impact of a "crash, just for one agency, extended beyond. But, a significant issue, all trains in the territory involved, were still safely under "vital" wayside signal control and able to move through interlockings (not under fleeting status) by having a qualified individual take over local control.

Flaws and Waivers

Continuous

The most serious impact of the NAJPTCP is its inability to be "continuous" when compared with "contention" shows: When one has reason to drop an authority in the face of an oncoming train, what is the relative and/or the maximum delay time from an incident of a hazardous event before the engineman is made aware that something is immediately ahead?? And what <u>additional</u> steps are introduced in implementing such a requirement?? (e,g, Provide each vehicle with a discrete address, having to know exactly where it is at, to employ links of communications over which one has no control [even the FCC states you are on your own] and a simple question of "congestion" -- central computer, contention, et all) All this in comparison with direct communication with the vehicle, over the very rails he is operating on -- no rails, he is not going anywhere anyway.. Thousands of equipped vehicles are in operation every day, with multi-aspect continuous cab signals and speed control, and no degradation due to dense traffic congestion and of station stops; all this with a common protocol allowing vehicles of different agencies and categories, to operate over each other's lines. Now compare this with the need to add many new steps and/or links, a horrendous increase in parts population, need to equip all the territories where agencies intermingle their rail traffic; then think of the issue of "interoperpability, to say nothing of reliability and such issues of qualification and maintenance of all the added systems, et all.

A basic flaw includes FRA's own unethical definition , in their consistently stating: a new processor based system is to be as good as or better than the system it replaces"

It would be more ethical and honest if the FRA might modify their often repeated statement to read along the lines of: "acceptance and approval of a processor based system should be compared to or allow evaluations with other existing systems and/or technologies to further support a product choice, in selection of one's overall investment, present and future, to satisfy ones problem involving safety and improved operation."

Complexity and Obsolescence

It is interesting to note, that the FRA themselves, in their NPRM conceded that modern processor type technology can be expected to have considerably less service life (due to obsolescence), as contrasted with conventional technology (approximately ½). [So much for cost basis]. In approach to some hurdles, there is a tendency to state some solution will be developed in the future; but even then, no consideration is given to such issues as added costs.

The FRA in granting any waiver, must be held to justify their analysis and judgement, why their position will be a contribution to improved "safety". The FRA continusly lean on 49USC20103 as their legal authority in support of their actions in general rule making authority. The FRA go on to state that a railroad can only discontinue or materially alter a signal system initially required by the Sect of DOT only with approval under 49USC20502. They go on to indicate that if they did not have rules for railroad signal and train control system regulation,"it would be a total abdication of the agency's duties" (67FR33532). To this writer, it seems that the FRA have already abdicated their authority and responsibility when they reach out and are guided by the function of the "RSAC" committee structure (The railroads have the ultimate task and liability to provide transportation of products and people; yet in the RSAC structure, they can be out voted by the multiplicity of players who are free of any blame or legal obligations .

As to complexity question, it would be redundant to again outline the increased systems with their added links, most not under direct control of the railroad, in combination with an explosive growth in parts population and software. As to responsibility, it is also interesting to note, that the there is on occasion that the FRA, in accepting the recommendation of their "RSAC" committees, have accepted voice votes, with no record of individual positions.

Update

FRA just don't know

The FRA in their recent NPRM relative to processor based equipment, and other documents ***, went so far as to state and admit there were issues in which they were not qualified; and went on to outline their right to call in outside consultants (at the railroads expense) to further advise them relative to the issues at hand. They go further, to out line the limits of their field forces, also to outline a procedure where they would have the right to have a consultant to accompany them in an inspection of a supplier's facilities, et all.

*** See this writer's response and supplemental response in the DOT Docket Management System relative to Docket FRA 2001-10160 at web site http://dms dot.gov

FRA in a world of Dreams

At Washington,DC meeting of the FRA's "RSAC" committees on the 29th of May '02, as a visitor, a question was asked of a ranking FRA staff person: How can you justify the economic advantages touted for the NAJPTCP with the underlying cost for track circuits for broken rail protection ?? The response to effect: "We're going to find a substitute for track circuits, to provide for broken rail protection at less cost". (Has this individual read some of the reports in resent issues of R T & S (Railway Track and Structures) as to the foolish and expensive trials recently funded to attempt to do just that??).

The FRA, even with their people on the ground have failed to note some of the inherent flaws in the Amtrak Michigan installation (Docket FRA 200-2-11533, 67FR19312 (e.g. elapsed time to alert the enginman of an immediate hazard ahead; failure, even dispatchment, to initialize vehicle entering the area, if not effective, to limit the vehicle to 79 mph operation, et all).

The FRA seem blind to the recommendations out of their own Volpe Center as to the practical limits of their infatuation of the Global Positioning System (GPS). Attention is invited to an article on page 32 of the "Civil Engineer", May '02 issue (Publication of the American Society of Civil Engineers -ASCE), which is titled Department of Transportation Keeps Back-up System for GPS Technology" which goes on to say, in part:

"...One draw back to GPS systems; however, is that interference from buildings and other transmissions can block satellite signals to GPS receivers. The Government is also concerned that signals could be broadcast intentionally to jam GPS receivers..."

Risk Analysis

Having witnessed death during my years in Europe and Africa during WW II, and subsequently while working on a railroad; it goes without saying (besides loss of appetite after such an experience) it goes with out saying, that I have followed a strong position of "Zero tolerance of failures". Space limitations limit a string of personal "horror stories" concerning this issue. However , it is of major concern to see the emphasis the FRA place on such issues as "Analysis of Risk factors" and studies of "Mean Time between failures" in their narrative in support of their NPRM relative to "Processor Controlled Train Control Systems".

Is the FRA adopted this tactic to sooth their position in the situation to justify where one is involved with a scheme which hardware and software does not exist?? It is difficult to accept any mathematical analysis of an unknown, when no realistic data exists for exposure to a railroad environment and its operation; whether it is involving a vehicle or wayside facility (to include the interplay of all systems and components, explosion of components population and issues over those items in a system over which the railroad has no control).

A reasonable railroader, with help of the "Kiss Principle" (Keep it simple stupid) , with a "disruption" has every right to expect an immediate safe restoration of service, he previously enjoyed, without undue delay (Need to assemble a committee to determine what to do - is unacceptable).

In the FRA's NPRM, they have built in obstacles to any ability to immediately recognize a problem, arrange for a fix, and in place thereof call for a committee, then seek source of the disruption, and not to forget the required reports.

Conclusion

The FRA should recognize, after some four years, the NAJPTCP has generated impressive "organizational charts", and elaborate bound publications, yet we still do not have a proven, economic , reliable, simple installation, that in any way can claim to be superior to prudent choices of proven existing technologies; therefore consideration should be given to phase down the NAJPTCP, per se, as having already demonstrated it's basis is prohibitive in cost and to date, failed to indicate it will ever be capable of interoperatability, as contrasted with more prudent alternatives, as reflected in existing areas of dense rail traffic density.

Belknap Freeman,PE

6 June 2002

Example of an Inherent Flaw - NAJPTC Project

A typical situation involving the North American Joint Positive Train Control Project (NAJPTC) which is typical of inherent flaws in the concepts proposed to implement a "vision", outlined in six simple parts, as follows:

The Issue
The FRA
The present
The Proposed
The "Wiggle Words"
The Unknown

The Issue:

Over the years, with the combination of many miles of railroad right of way, in combination with frequency of train movements; it is not unusual to be faced with the situation where a hazardous condition, or the decision to remove an authority for a train's continued movement occurs. In such a situations, it is essential to notify the oncoming train as soon as possible of those conditions immediately ahead, in order to allow the engineman to respond to changed conditions.

The FRA:

In application of continuous cab signals on the moving vehicles, the Rules of the Federal Railroad Administration (FRA), a pertinent concept that existed many years prior to the existence of the FRA, are quite clear, as indicated in Section 236.511, Part 236, of Title 49 Code of Federal Regulations; which reads:

"236.511....The automatic cab signal system shall be arranged so that cab signals will be <u>continuously controlled</u> in accordance with conditions described in § 236.205 that obtain at least stopping distance in advance." (Underline added)

The Present:

Conventional techniques, employing "off the shelf" equipment provide train movement authority to moving trains by continued coded electrical energy transmitted in the very track rails the train is operating on. The coded energy is picked up by coils ahead of the lead wheels, decoded; thus to display the appropriate indication on the enginman's display unit.

The selection of the cab signal codes are placed in the same instrument(s)that also change the appropriate wayside

signal aspect, such as to guarantee between wayside and locomotive cab signal, as well as change both in minimum time as they work together. (It is the track rails the vehicle is operating on, not related to terrain, tunnels, valleys, et all.Where-ever the track for a particular train goes, the cab signal energy goes as well)..

As options, added to the underlying scheme of logic of the cab signal, one can add various overlays to further enhance "safety" such as "speed control" on the vehicle, and such features as "code change points" on the wayside. In some applications, intermediate wayside signals on the wayside are eliminated; depending entirely on the use of appropriate cab signal codes to the vehicle involved.

The existing arrangements are "vital" (fail safe) on the vehicle, the coupling link (the track rails), and on the wayside.

The **Proposal:**

The proposed scheme of the NAJPTC is predicated on the transmission of all intelligence from all sources (Wayside track occupancies, position of switches and signals, location of both ends of trains, authorities issued, dispatchers instructions, et all) into a "central server" (computer), which sorts out all situations, and thus, to convey appropriate "authorities" to individual trains (each with their own discrete address) , defining the limits and speeds they have to move.

The medium between the vehicle and the wayside, for ultimate linkage to the "central server" , of both transmissions from the vehicle as to its location and health; as well as receipt of movement authorities, is by use of digital radio links.

Rather than having immediate access to the vehicle via the very tracks it is operating on, now requires that the vehicle know where it is at by an added sub-system; to know where it is transmitting from to the central "server", so that the server will know what radio base station would be appropriate to attempt to reach the vehicle.. Note, this exchange back and forth, all added links must now be vital(hopefully on a fail safe basis), and one is now faced with the <u>new requirement</u> that the vehicle have a discrete address, know its length, direction of travel, category, et all.

The system is venerable to having all its eggs "in one basket""(The central server) impact of "traffic congestion; with little noted so far as to redundancy involving each and every added link added as the concept is patched together.

The proposed scheme still dictates the requirement to

have conventional track circuits to provide "broken rail detection" and detect "noh equipped " vehicle movements. (This , in addition of other facilities, makes a mockery of cost and maintenance requirements.). It is absurd to squander ones resources, in providing track circuit resources, then not employ them for the simplicity and proven **continuous** reliability, as one throws away the opportunity to add the overlay of a conventional cab signal facility, thus to address the specific train involved, over the very rails it is operating on.

The NAJPTC "Wiggle Words"

The NAJPTC -- IDOT PTC Ptoject Document "Concept of Operations", version 1.4 , states in part, its pages 4-8 and 4-9

4.2.6. System Not to be Dependent on Continuous Communications Coverage

As RF data communications networks have become more common in train control and other railroad applications, the reliability of the communications link and protocol has been proven and accepted by railroads. However, it is not possible to guarantee that 100% of all messages will get through on the first attempt on an RF communications network. Furthermore, it can be extremely costly to provide sufficient base stations to guarantee 100% coverage 100% of the time. Although the communications link can provide reliable error detection, the assurance of absolute communications coverage over the entire railroad cannot be assumed at all times in a large-scale implementation.

Consequently, a communication-based train control system that uses RF as the communications means must be designed in such a way that temporary outages in coverage will not cause an adverse effect on the operation of the system, either in terms of safety or in terms of introducing unacceptable levels of system latency.

To restate, from a safety aspect, the loss of communications coverage for trains must not result in an unsafe situation, and loss of coverage must not necessarily lower operating efficiency of the railroad, such as stopping trains whenever temporary coverage loss occurs.

It is the project's own words, that in effect state that the proposed project completely eliminates assurance that one can notify the moving train of any unplanned , hazardous or otherwise, condition ahead in a matter of seconds; at any time; as required, by good sense and experience, by FRA Rules (§ 236.511), and as provided by off the shelf equipment and technology" (As so arranged through-out the country, already installed and proven; also employed and provided on Amtrak's locomotive fleet, both diesel and electric).

The "Unknown":

That the NAJPTC project, already several years old, only a **"projection"** as to when they expect to have

sufficient development to even start a "test program", does nothing at this time for Amtrak's ability to meet the demand for improved train schedules in the St. Louis - Chicago corridor.

That the NAJPTC project has inherent flaws; such issues would preclude extending their "vision" into the ends of the same route of the designated territory , in respect to all other conflicting rail traffic .(Not alone anywhere else).

What Amtrak does know, is that it operates, with conventional continuous cab signal packages, with speed control, intermingled with with trains of other agencies (also like equipped), in the densest rail traffic territory in the country, in both rural and congested terminal environments , at speeds up to 125 miles per hour, and employing the same techniques; with compatible (with freight) overlay, providing a nine aspect continuous cab signal with nine aspects allowing for speeds up to and operating at 150 miles per hour.

Belknap Freeman,PE
Rosemont, PA
19 November 2001